

# TA-F830ES

## SERVICE MANUAL

*Germany Model*



### SPECIFICATIONS

Daten	Meßbedingungen	Meßwerte
Sinus-Dauerleistung (beide Kanäle gleichzeitig angesteuert)	4 Ohm, 20 Hz – 20 kHz Klirrgrad 0,008%	180 W + 180 W (DIN: 210 W + 210 W)
	6 Ohm, 20 Hz – 20 kHz Klirrgrad 0,006%	150 W + 150 W (DIN: 170 W + 170 W)
	8 Ohm, 20 Hz – 20 kHz Klirrgrad 0,004%	120 W + 120 W (DIN: 145 W + 145 W)
Leistungsbandbreite (IHF)	4 Ohm, THD 0,04%	10 Hz – 100 kHz bei 90 W
	8 Ohm, THD 0,04%	10 Hz – 100 kHz bei 60 W
Dynamik-Kopfraum ('78 IHF)	4 Ohm	2 dB
	8 Ohm	1,2 dB
Gesamtklirrgrad	8 Ohm, bei 10 W Ausgangsleistung	0,002%
Intermodulationsverzerrung (IM) 60 Hz: 7 kHz = 4: 1	4 Ohm, bei Nennausgangsleistung	0,008%
	6 Ohm, bei Nennausgangsleistung	0,006%
	8 Ohm, bei Nennausgangsleistung	0,004%
Dämpfungsfaktor	8 Ohm, 1 kHz	100
Eigenrauschen	Netzwerk A	unter 115 µV

Daten	Meßbedingungen	Meßwerte
Frequenzgang	PHONO MM	RIAA-Entzerrungskurve ±0,2 dB
	TUNER, CD, TAPE 1, 2, 3, DIRECT IN	2 Hz – 200 kHz ± <sup>0</sup> <sub>-3</sub> dB
Eingangsempfindlichkeit	PHONO	0,17 mV, 33 Ohm
	MC	0,17 mV, 100 Ohm
	MM	2,5 mV, 50 kOhm
S/R (Netzwerk) * 78 (IHF)	TUNER, CD, DIRECT IN, TAPE 1, 2, 3, ADAPTOR IN	150 mV, 50 kOhm
	PHONO	78 dB*, 70 dB (A)
	MC	80 dB*, 87 dB (A)
	MM	84 dB*, 105 dB (A)
	TUNER, CD, DIRECT IN, TAPE 1, 2, 3, ADAPTOR IN	

— continued on next page —

**INTEGRATED STEREO AMPLIFIER**  
**SONY®**

Daten	Meßbedingungen	Meßwerte
Ausgangsimpedanz	REC OUT 1, 2, 3, ADAPTOR OUT	150 mV, 1 kOhm
	PRE OUT	1,0 V, 100 Ohm
	HEADPHONES	25 mW (bei 8 Ohm) Für Kopfhörer niedriger oder hoher Impedanz
Klangregler	BASS (100 Hz)	$+4_{-5.5}$ dB (Übernahme- frequenz 200 Hz)
		$+6_{-7}$ dB (Übernahme- frequenz 400 Hz)
	TREBLE (10 kHz)	$-8_{+7}$ dB (Übernahme- frequenz 3 kHz)
		$+5_{-4}$ dB (Übernahme- frequenz 6 kHz)
SUBSONIC-Filter	—	Dämpfung 6 dB/ Oktave unter 15 Hz

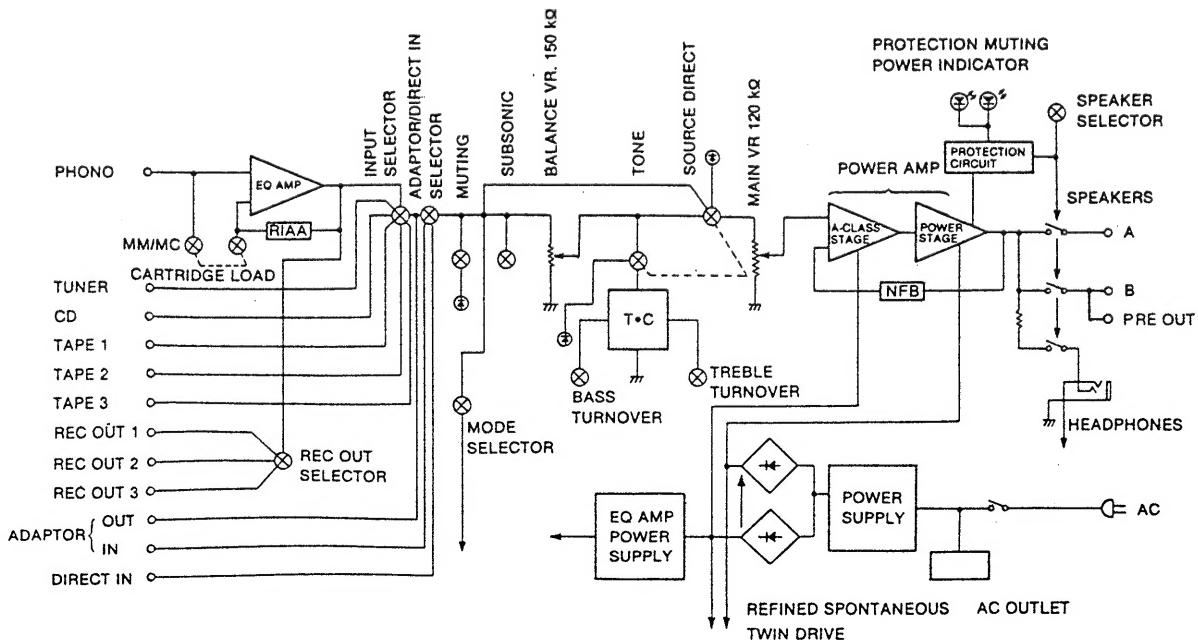
**Allgemeine Daten**

System Vorverstärkerteil: rauscharmer FET-Verstärker,  
 SUBSONIC-Filter Entzerrerverstärker ohne Rückkopplung,  
 passive Klangregler  
 Leistungsverstärkerteil: reinkomplementäre  
 Gegentaktstufe ohne Transformatoren und  
 Kondensatoren  
 Stromversorgung 220 V Wechselspannung, 50/60 Hz  
 Leistungsaufnahme 420 W  
 Zubehör-Steckdose 1 × geschaltet, max. 100 W  
 Abmessungen ca. 470 × 170 × 435 mm (B/H/T)  
 einschl. vorspringender Teile und  
 Bedienungselemente  
 Gewicht ca. 24,5 kg netto  
 Mitgeliefertes Zubehör  
 Schrauben (8)

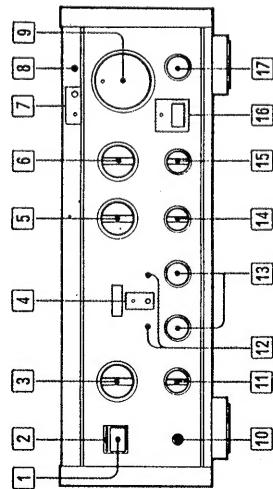
Änderungen, die dem technischen Fortschritt dienen, bleiben  
 vorbehalten.

**SAFETY-RELATED COMPONENT WARNING!!**

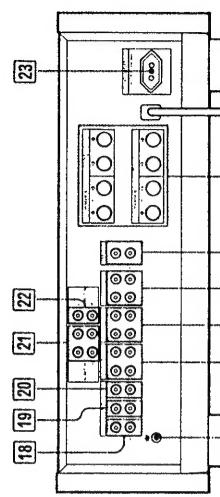
COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

**BLOCK DIAGRAM**

# SECTION 1 GENERAL



Vorderseite



Rückseite

## 1 Netzschalter (POWER)

Während der kurzen Wartephase unmittelbar nach dem Einschalten des Geräts leuchtet dieser Indikator rot. Sobald der Verstärker betriebsbereit ist, leuchtet der Indikator dann grün.

Spricht die eingeschaltete Schutzschaltung infolge eines Kurzschlusses am Lautsprecher ausgang oder an einem Eingang an, so leuchtet der Indikator rot. Siehe in diesem Fall den Netzstecker aus der Wandsteckdose, und überprüfen Sie die Anschlüsse der Komponenten und Lautsprecher.

## 2 Klangschalter (TONE) und Indikator

Ist dieser Schalter gedrückt, so leuchtet der rote Indikator, und der Klartöner kann mit den BASS- und TREBLE-Reglern beeinflußt werden.

## 3 Adapter/Direktleitungs-Schalter (ADAPTER/DIRECT IN)

In der NORMAL-Position kann die Signalausgabe mit dem INPUT SELECTOR-Wähler gewählt werden. Zur Wahl des Eingangssignals, das über das an den ADAPTER-Buchsen angeschlossene Zusatzgerät (z.B. Graphic-Equalizer) geleitet wird, stellen Sie den Wähler auf ADAPTER. Zur Wahl des an die DIRECT IN-Buchsen angeschlossenen Gerätes stellen Sie den Schalter auf DIRECT IN.

## 4 Hinweis

Die an den REC OUT-Ausgängen anliegenden Signale sind bei ADAPTER gesetzten Schalter nicht über das Zusatzgerät geleitet worden.

Die an die DIRECT IN-Buchsen angeschlossene Signalausgabe kann nicht über das Zusatzgerät geleitet und auch nicht an den REC OUT-Buchsen ausgegeben werden.

## 5 Eingangswähler (INPUT SELECTOR)

Zur Wahl der gewünschten Signalausquelle.

## 6 Dämpfungsschalter (MUTING) und Indikator

Lassen Sie diesen Schalter normalerweise ausgesetzt (auf OFF).

Um die Lautstärke um 20 dB zu verringern, drücken Sie den Schalter (die Ausgangsspannung verringert sich auf 1/10).

## 7 SUBSONIC-Filterschalter

Bei gedrücktem Schalter werden unerwünschte Tiefstfrequenzen unter 15 Hz, die intermodulationsverzerrungen verursachen, bedämpft.

## 8 Lautstärkeregler (ATTENUATOR)

Zur Einstellung der Lautstärke.

## 9 Kopfhörerbuchse (HEADPHONE) (Stereo-Klinkenbuchse)

## 10 Betriebsartwähler (MODE)

STEREO: Zur Wiedergabe einer Stereo-Signalausquelle. MONO: Zur Wiedergabe einer Mono-Signalausquelle.

## 11 Übergangsfrequenzwähler (TURNOVER)

Zur Wahl der Übergangsfrequenz.

## 12 Bass- und Höhenregler (BASS, TREBLE)

Die Bass- und Höhenregler (BASS, TREBLE) TONE-Schalter möglich.

## 13 Zubehör-Steckdose (AC OUTLET)

Zur Stromversorgung von anderen Audio-Komponenten, deren Leistungsaufnahme 100 W nicht überschreitet.

## 14 Aufnahmegerätausgangswähler (REC OUT SELECTOR)

Zur Wahl der Signalausgabe, die über die REC OUT-Ausgänge (an der Oberläderückseite) aufgenommen werden soll.

## 15 Tonabnehmer-Impedanzwähler (CARTRIDGE LOAD)

Stellen Sie diesen Wähler entsprechend des Plattenspieler-Tonabnehmertyps ein:

MM: Bei einem Tonabnehmer mit Magnetsystem.

MC: Bei einem dynamischen Tonabnehmer.

40 Ω: Für Tonabnehmer mit einer Impedanz von 40

Ω oder mehr.

3 Ω: Für Tonabnehmer mit einer Impedanz von 3

bis 40 Ω.

## 16 Eingangssignal-Direktschalter (SOURCE DIRECT)

Bei gedrücktem Schalter leuchtet der rote Indikator, und die Schaltkreise von TONE-Schalter, SUBSONIC-Filterschalter, BALANCE-Regler sowie MODE-Schalter werden übergegangen.

Der Indikator des TONE-Schalters leuchtet dann auch bei gedrücktem TONE-Schalter nicht.

## 17 Balanceregler (BALANCE)

Zur Einstellung der Balance zwischen linkem und rechtem Lautsprecher.

## 18 PHONO-Eingänge

## 19 TUNER-Eingänge

## 20 CD-Eingänge

## 21 Adapter-Ein/Ausgänge (ADAPTOR IN/OUT)

Die mit dem INPUT SELECT-Wähler an der Vorderseite des Gerätes gewählten Signale liegen an den OUT-Buchsen an und werden über die IN-Buchsen zurückgeleitet.

## 22 Direktleitungsausgänge (DIRECT IN)

Zum Anschließen an die Ausgänge des Cassettedecks.

Wenn ein HiFi-Videorecorder angeschlossen werden soll, verbinden Sie die Audio-Line-Eingänge des Video recorders mit diesen Ausgängen.

## 23 Band-Eingänge (TAPE)

Zum Anschließen an die Aufnahmegerätausgänge (REC OUT). Zum Anschließen an die Band-Eingänge des Cassettedecks.

Zur Tonwiedergabe eines HiFi-Videorecorders, eines Bildplatenspielers oder eines TV-Tuners verbinden Sie die Audio-Line-Ausgänge dieser Geräte mit diesen Eingängen.

## 24 Verstärkerausgänge (PRE OUT)

Zum Anschluß eines Leistungsverstärkers oder Aktivlautsprechers.

## 25 Lautsprecheranschlüsse (SPEAKER)

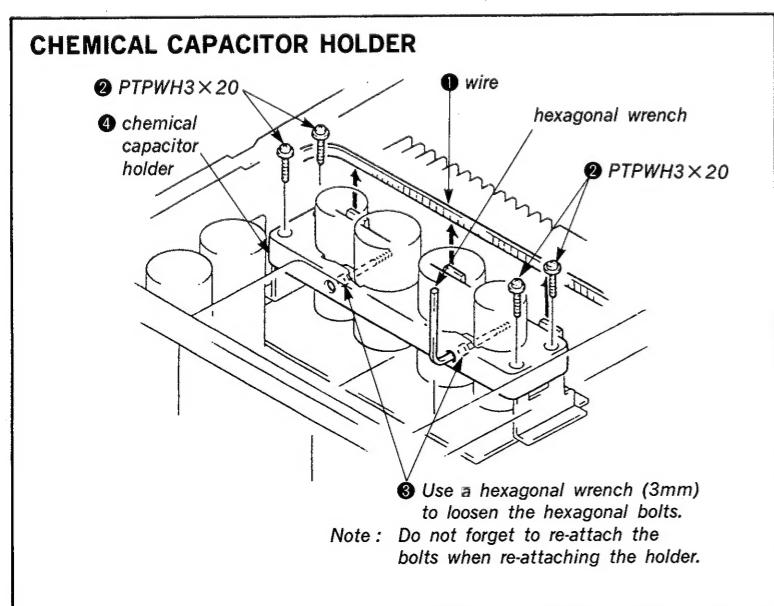
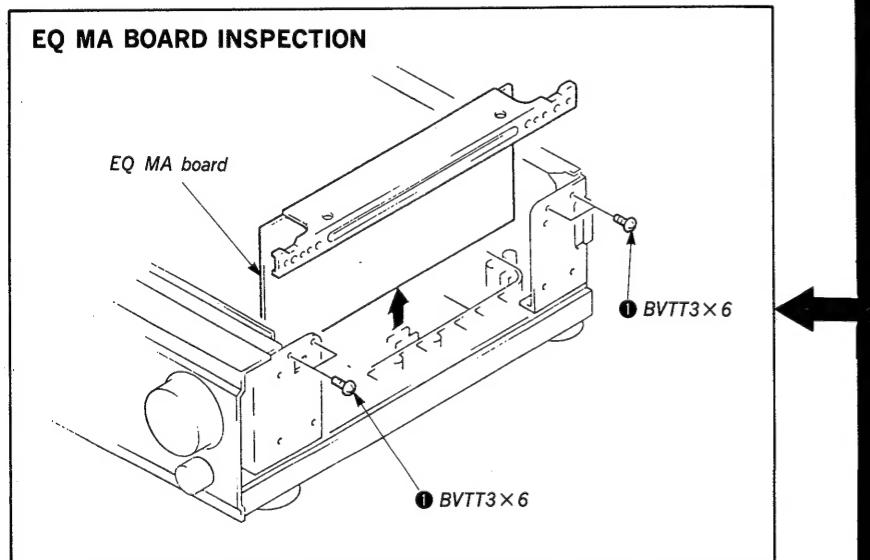
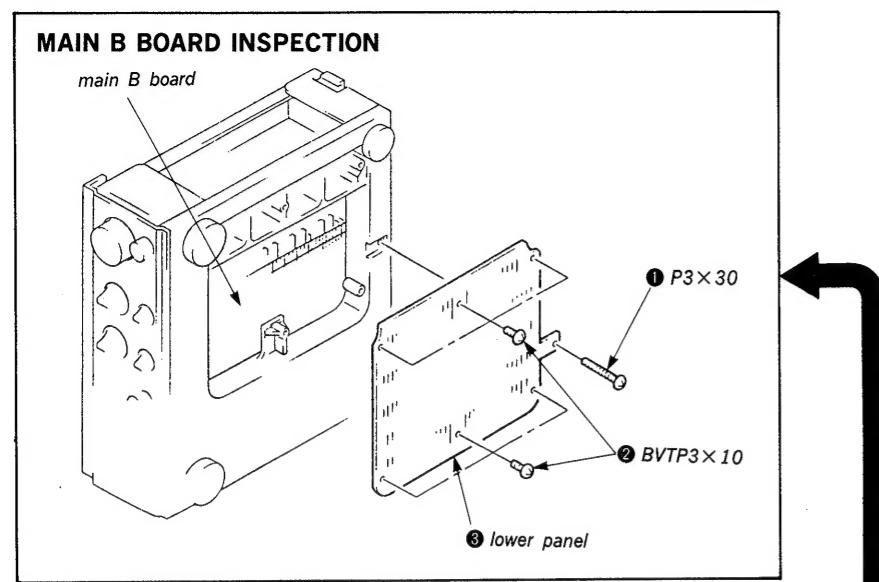
Zum Anschließen eines oder zweier Lautsprecherpaare. Am SPEAKERS-Wähler an der Vorderseite kann das gewünschte Lautsprecherpaar, A, B oder A + B, gewählt werden.

## 26 Hinweis

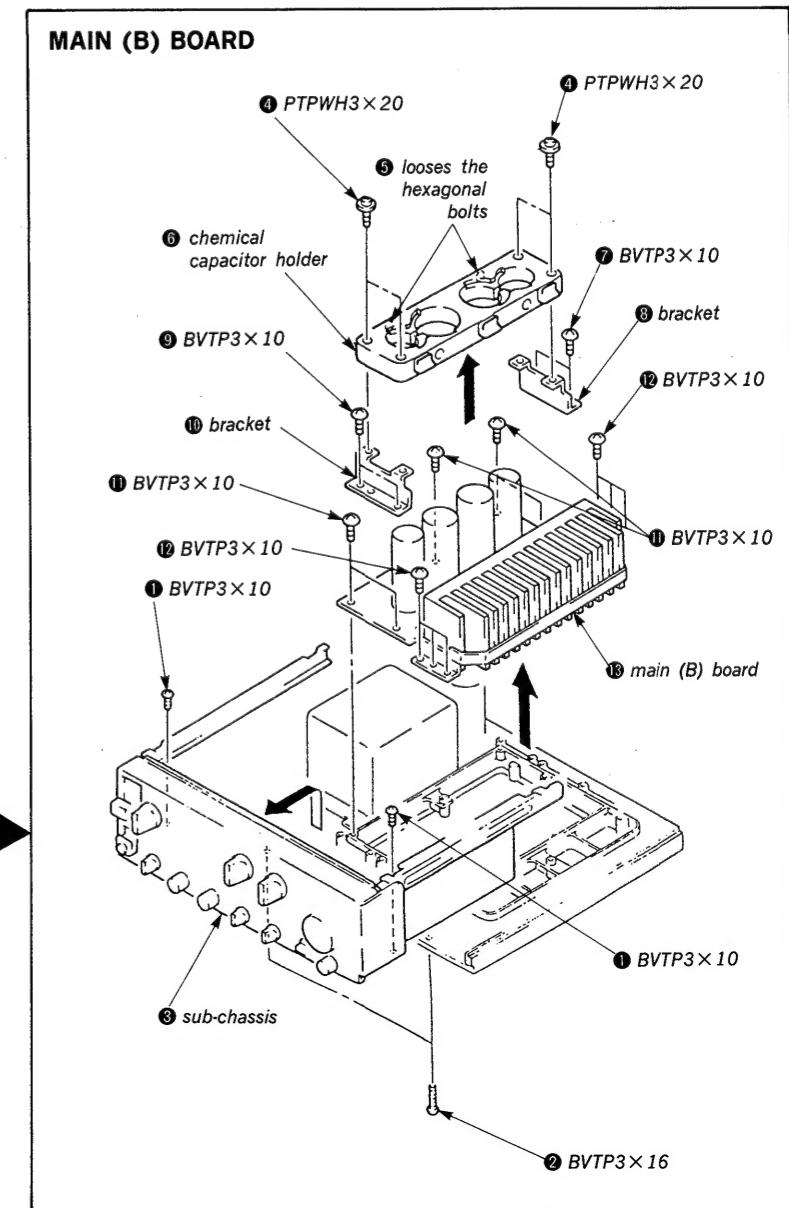
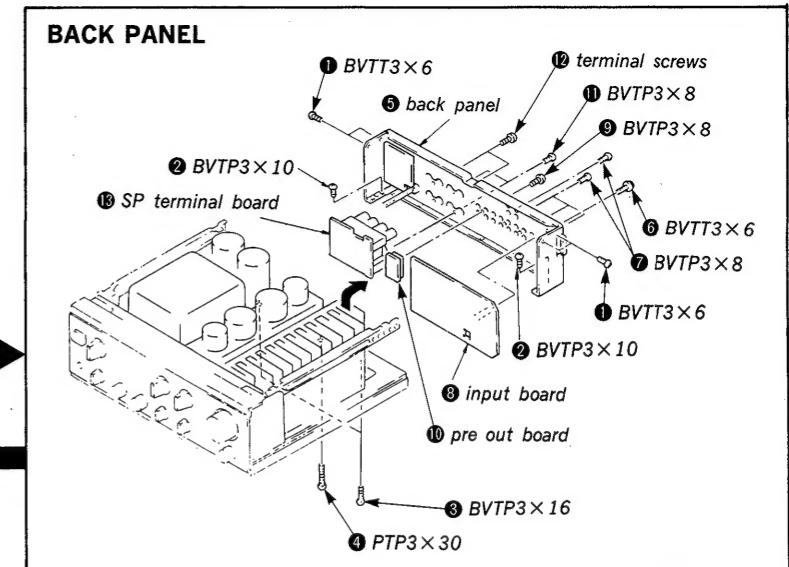
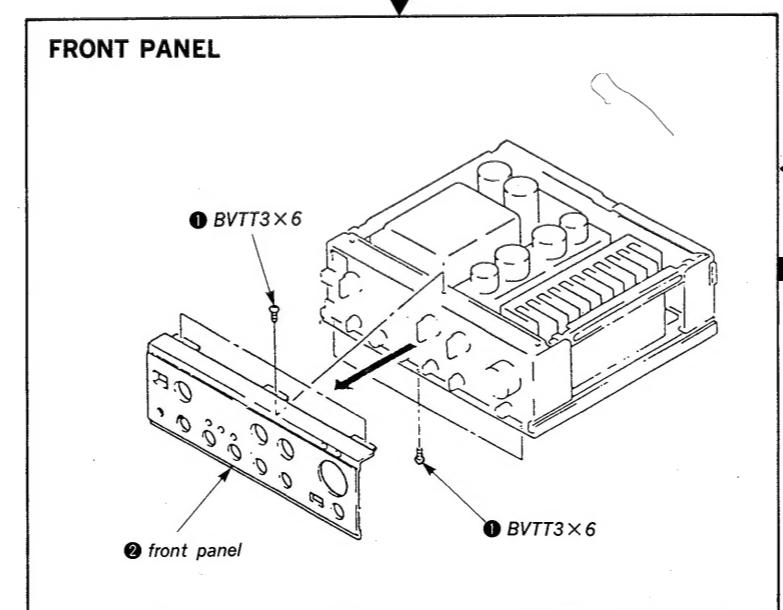
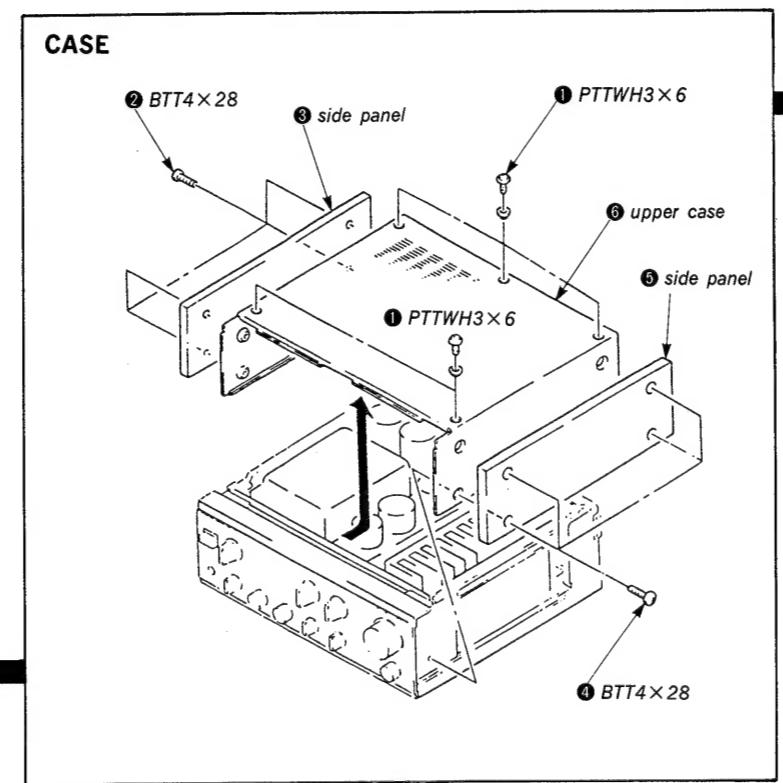
Die an die DIRECT IN-Buchsen angeschlossene Signalausgabe kann nicht über das Zusatzgerät geleitet und auch nicht an den REC OUT-Buchsen ausgegeben werden.

## **SECTION 2**

# **DISASSEMBLY**

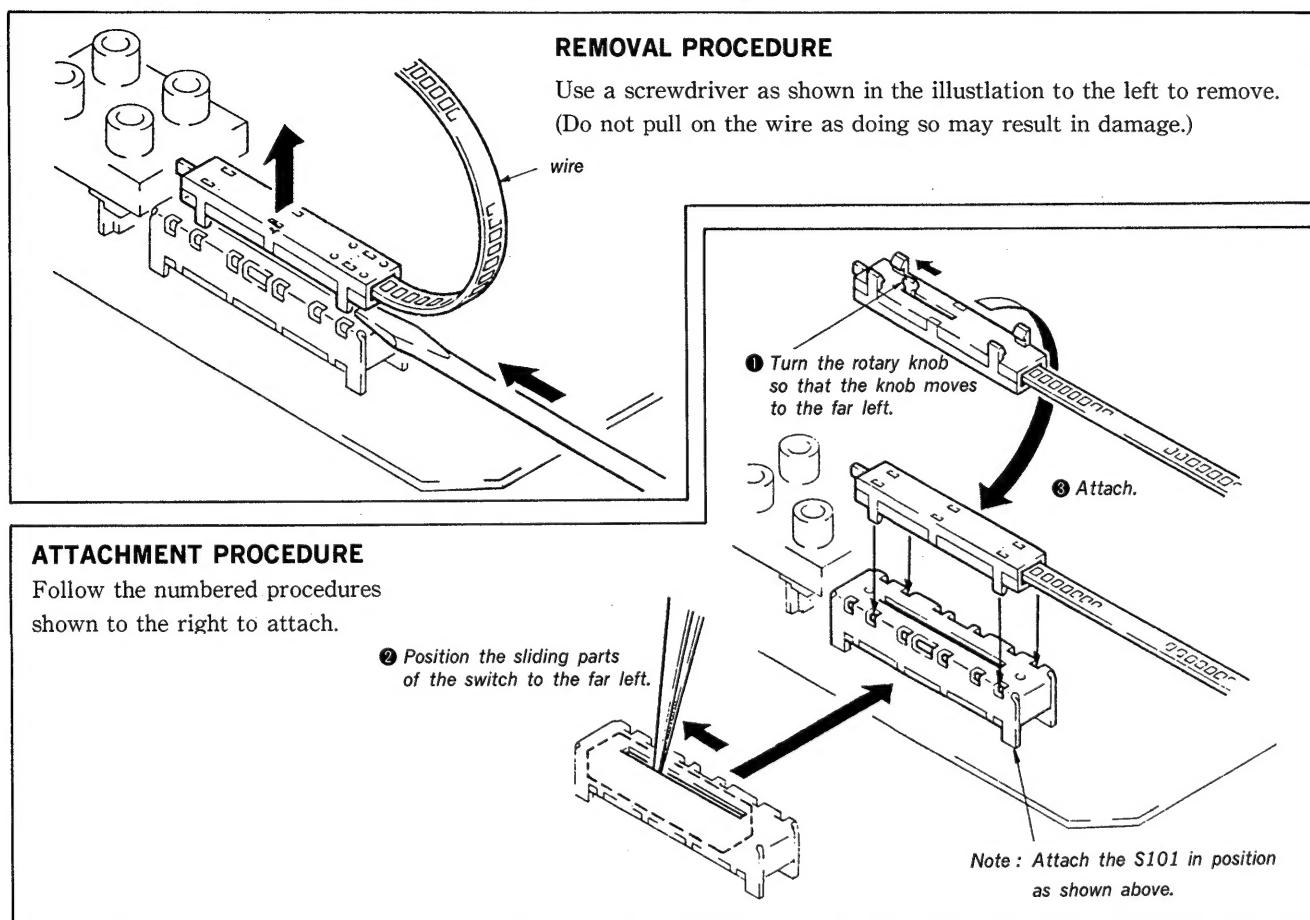


**NOTE:** Follow the disassembly procedure in the numerical order given.



### SECTION 3 REMOVAL SWITCH BLOCK

Note : Follow the disassembly procedure in the numerical order given.

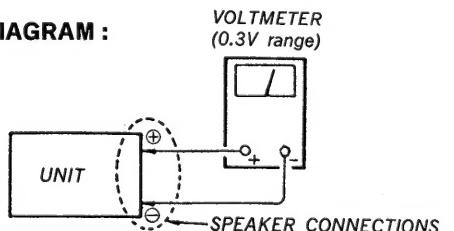


### SECTION 4 ELECTRICAL ADJUSTMENTS

#### OFFSET ADJUSTMENT

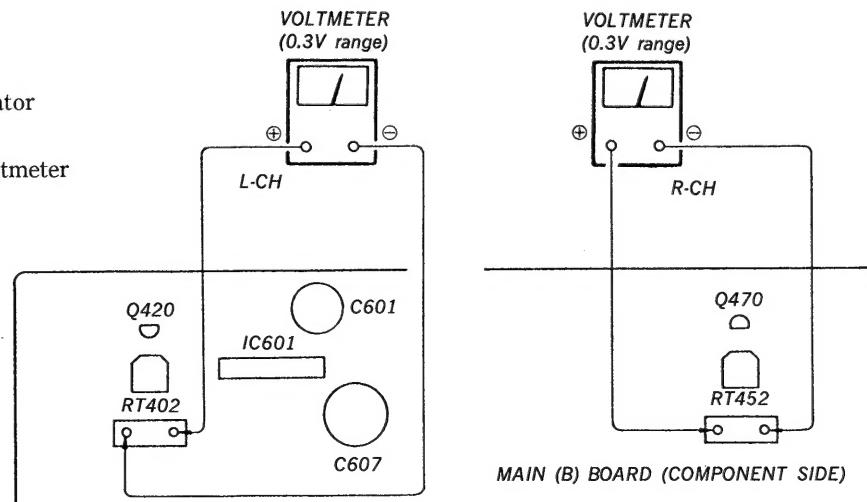
1. With no signal input, turn the attenuator counter-clockwise as far as possible.
2. Adjust RT401 and 451 on the main board so that the voltmeter reads 0V.

#### WIRING DIAGRAM :



#### BIAS ADJUSTMENT

1. With no signal input, turn the attenuator counter-clockwise as far as possible.
2. Adjustment RT402 and 452 so the voltmeter reads 15mV.



### SECTION 5 DIAGRAMS

#### 5-1. SEMICONDUCTOR LEAD LAYOUTS

NE5534P	2SA1492 2SC3856	30DF2
μPC1237HA	2SB716-D 2SC1841-PA 2SD756	CTU-22R
2SA985A-P 2SA1383 2SC2275 2SC3514 2SC3514-Q	2SC945-P 2SD756	CTU-22S
2SA995F	2SC3423	HZS6B1L HZS6C3L HZS9B2L
2SK147	2SA1138 2SD774-3	SEL1810A
2SA1175HFE 2SC2785HFE	2SK246-GR2	SEL2213C
2SA1407D 2SB731 2SC3601	2SK389-GR	SEL2510C
10E2N HZ2CLL US1060M	10E2N HZ2CLL US1060M	

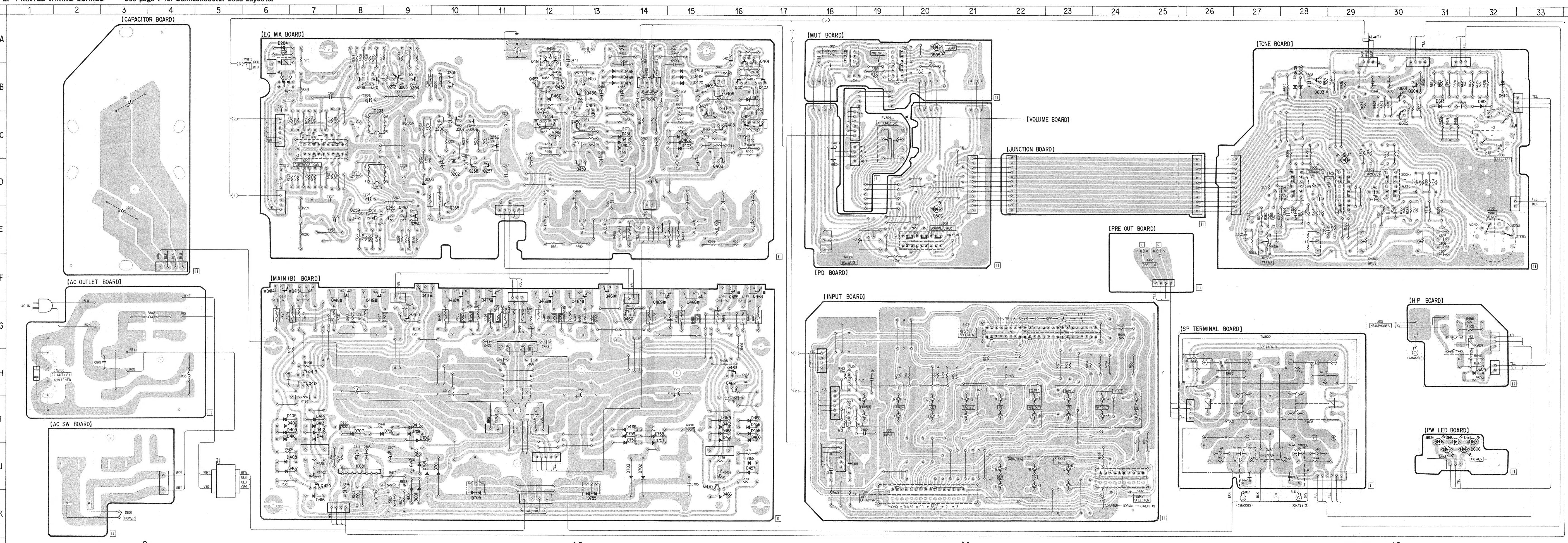
## • Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D202	D-10	D755	K-13	Q470	J-16
D203	D-9	D756	I-14	Q601	B-30
D204	A-6	D757	I-14	Q602	B-30
D401	C-15	D758	I-14	Q603	B-28
D402	C-15	D759	I-14	Q604	B-30
D403	I-6	IC203	C-8		
D405	I-6	IC253	D-8		
D406	I-6	IC601	J-8		
D407	J-6				
D408	J-6				
D409	I-6	Q201	B-8		
D410	I-6	Q202	B-9		
D411	I-7	Q203	B-9		
D412	I-6	Q204	B-9		
D413	I-6	Q205	B-10		
D414	I-6	Q206	C-10		
D415	I-9	Q207	C-10		
D416	K-7	Q208	C-10		
D417	B-16	Q209	B-8		
D418	B-15	Q251	E-8		
D419	B-15	Q252	E-9		
D420	B-15	Q253	E-9		
D451	C-14	Q254	E-9		
D452	C-14	Q255	D-10		
D453	C-14	Q256	C-11		
D455	I-16	Q257	D-11		
D456	I-16	Q258	D-10		
D457	I-16	Q401	E-8		
D459	I-16	Q402	B-16		
D460	I-16	Q403	B-17		
D461	I-16	Q404	C-16		
D462	I-16	Q405	B-16		
D463	I-16	Q406	B-16		
D464	I-16	Q407	C-15		
D465	I-14	Q408	C-16		
D466	K-16	Q409	C-16		
D467	B-12	Q410	G-9		
D468	B-14	Q411	F-9		
D469	B-14	Q412	H-7		
D470	B-14	Q413	H-7		
D505	A-20	Q414	F-6		
D506	E-20	Q415	F-7		
D507	C-29	Q416	F-10		
D601	J-9	Q417	F-11		
D602	J-9	Q418	F-8		
D603	J-9	Q419	F-8		
D604	H-32	Q420	J-7		
D605	B-28	Q451	A-12		
D606	B-28	Q452	B-12		
D607	J-31	Q453	B-12		
D608	J-31	Q454	C-12		
D609	I-31	Q455	B-13		
D610	I-31	Q456	B-13		
D611	I-32	Q457	C-13		
D612	B-32	Q458	C-13		
D613	B-31	Q459	D-13		
D614	B-32	Q460	G-14		
D701	J-10	Q461	F-13		
D702	J-14	Q462	H-16		
D703	J-14	Q463	H-16		
D704	J-9	Q464	F-16		
D705	K-10	Q465	F-16		
D706	I-9	Q466	F-12		
D707	I-8	Q467	F-13		
D708	I-8	Q468	F-15		
D709	I-9	Q469	F-14		

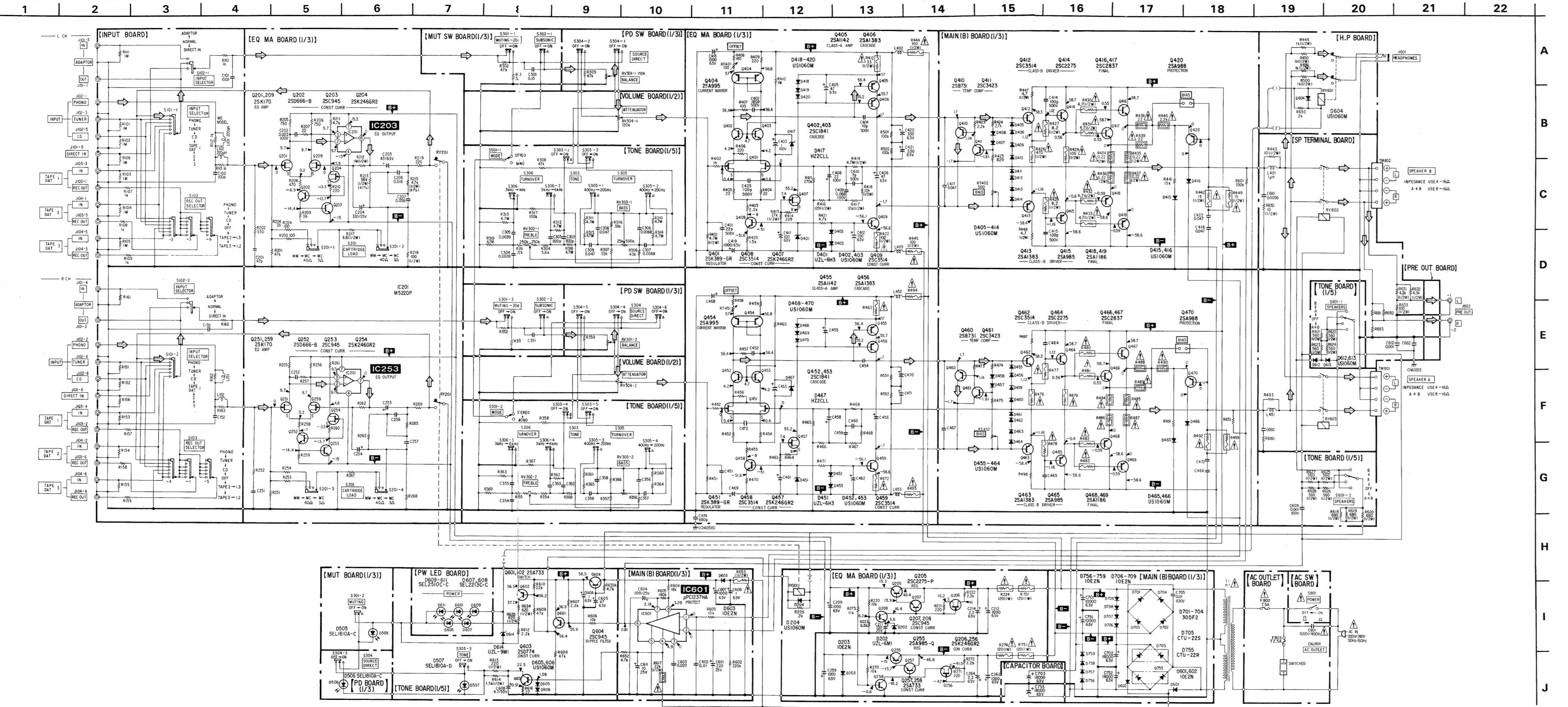
Note:

○ : parts extracted from the component side.  
 ■ : parts mounted on the conductor side.

## 5-2. PRINTED WIRING BOARDS • See page 7 for Semiconductor Lead Layouts.



### 5-3. SCHEMATIC DIAGRAMS

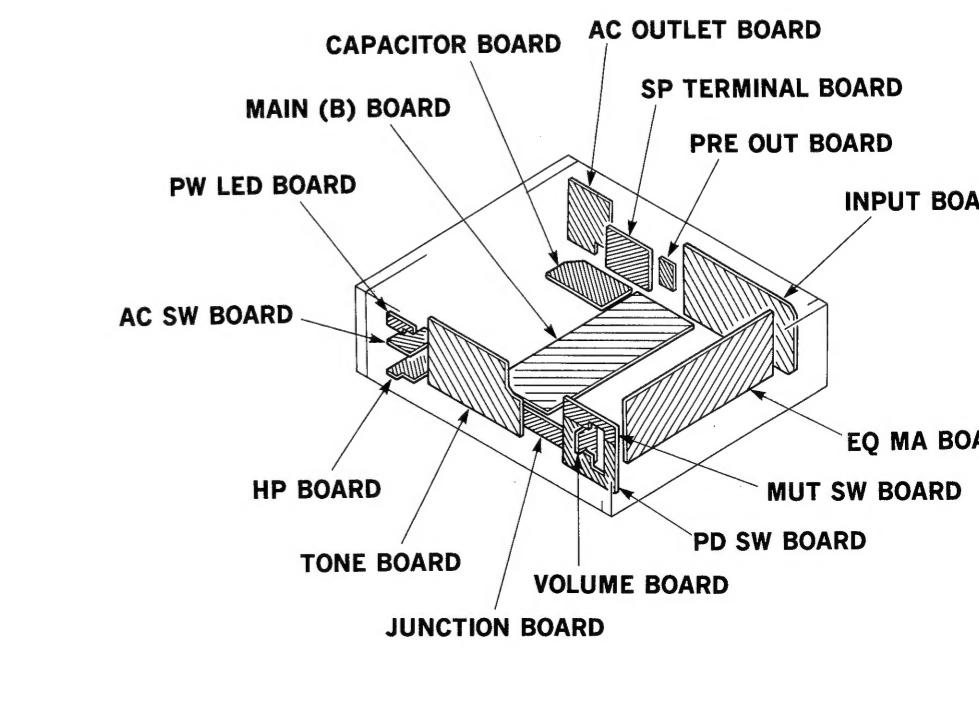


Note:

- All capacitors are in  $\mu$ F unless otherwise noted. pF:  $\mu\mu$ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and 1/4 W or less unless otherwise specified.
- % indicates tolerance.
- Components for right channel have same values as for left channel. Reference numbers are coded from 100-400 and 600.
- : nonflammable resistor.
- : fusible resistor.
- : B+ Line
- : B- Line
- : adjustment for repair.
- Voltage is dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input Impedance 10M  $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- : PHONO

Note: The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

### 5-4. CIRCUIT BOARDS LOCATION



## SECTION 6 EXPLODED VIEWS

**NOTE:**

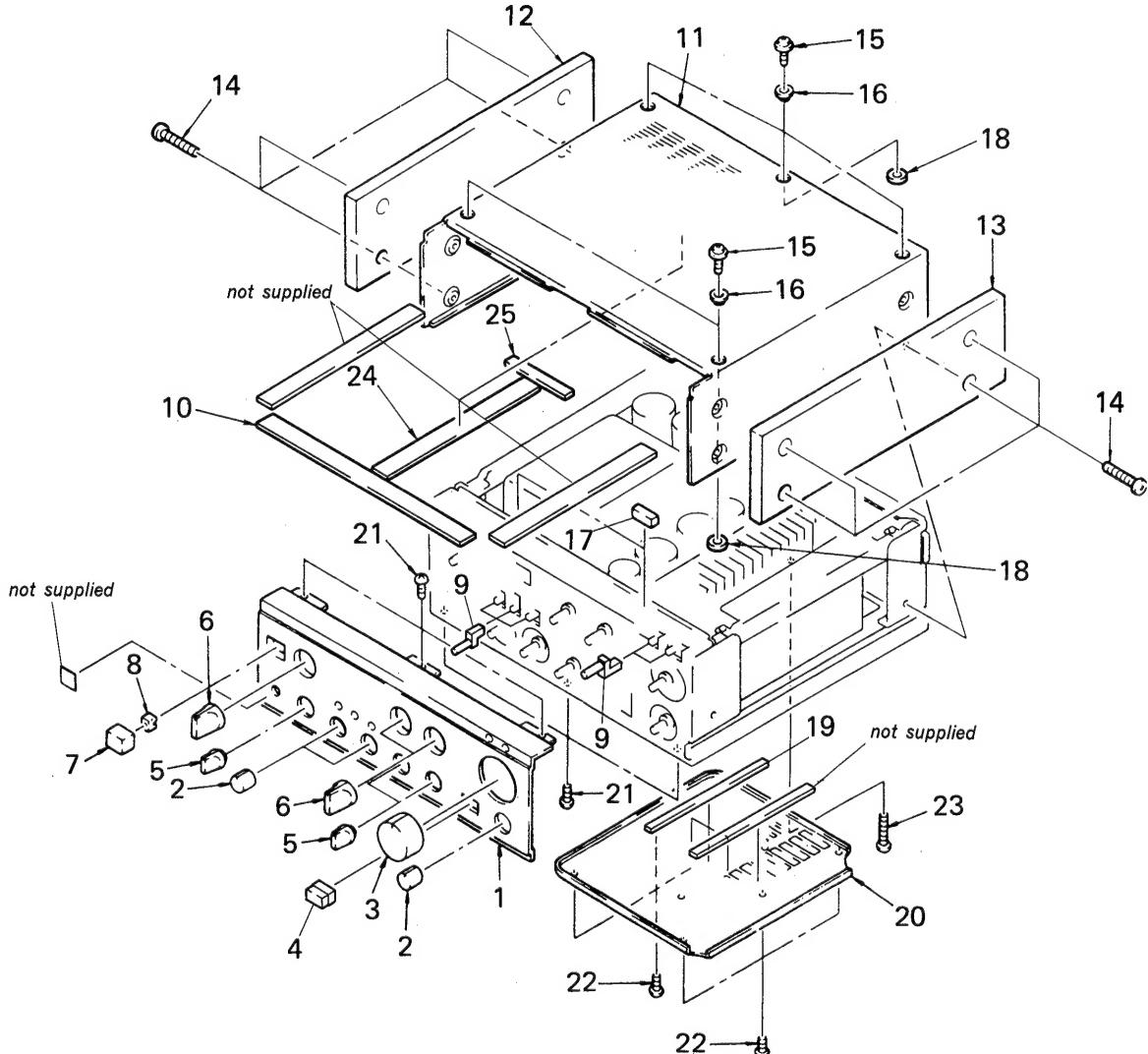
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked “★” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

- Color Indication of Appearance Parts

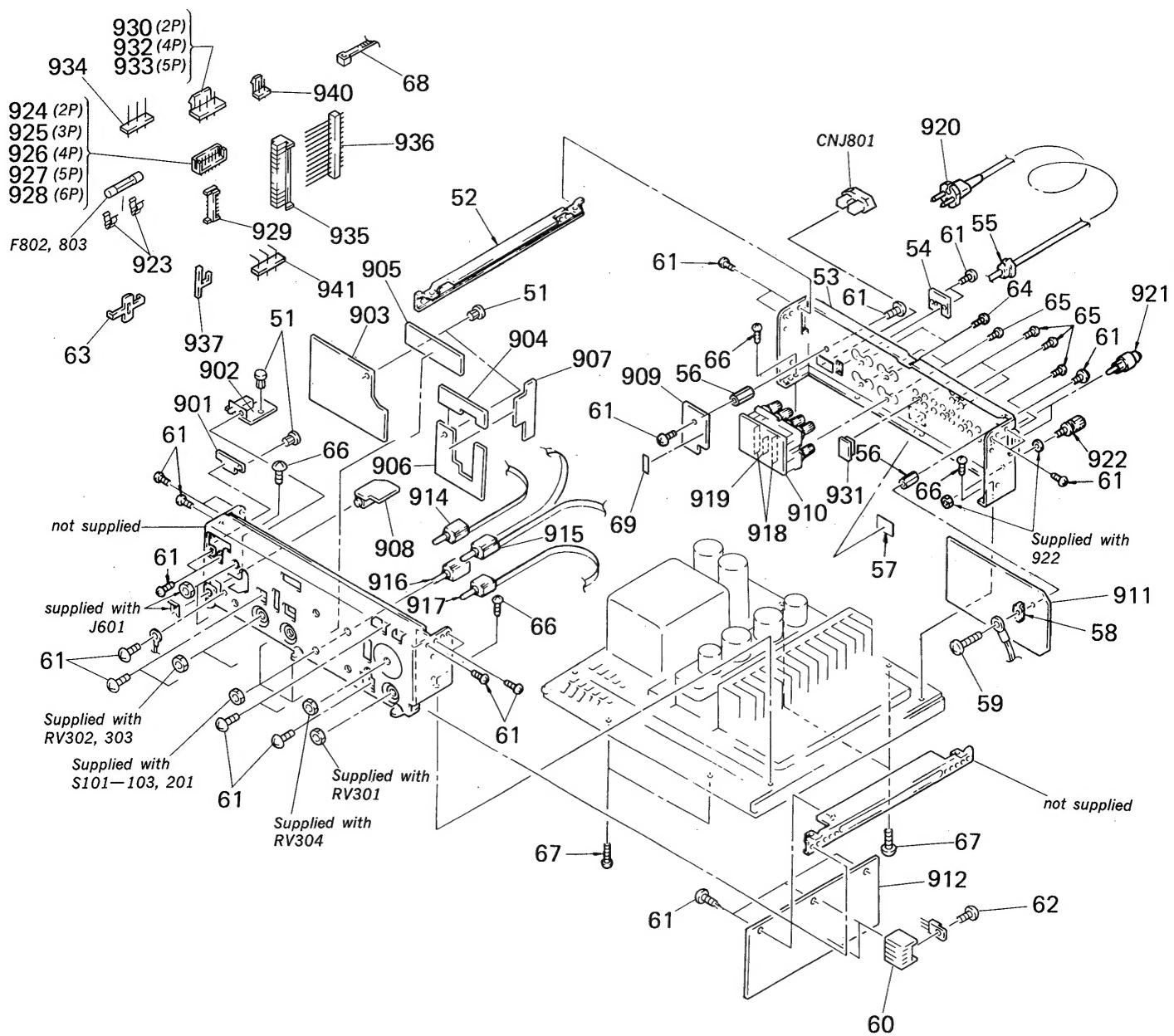
Example:  
 (RED) ... KNOB, BALANCE (WHITE)  
 ↑   ↑  
 Cabinet's Color                          Parts Color

The components identified by mark or dotted line with mark are critical for safety.  
 Replace only with part number specified.

**6-1. CASE ASSEMBLY**

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	A-4317-917-A	PANEL ASSY, FRONT		13	X-4885-952-1	PANEL (RIGHT) ASSY, SIDE	
2	4-923-871-01	KNOB (ROUND-22)(BASS/TREBLE/BALANCE)		14	4-885-979-21	SCREW (4X28)	
3	4-923-870-01	KNOB (ROUND-55)(ATTENUATOR)		15	4-886-821-01	SCREW, S TIGHT, +PTTWH 3X6	
4	4-917-460-21	KNOB (SOURCE DIRECT)		16	3-576-298-11	ESCUTCHEON	
5	4-923-869-01	KNOB (FLAT-22) (MODE/REC OUT SELECTOR/CARTRIDGE LOAD)		17	*4-908-872-01	CUSHION	
6	4-923-868-01	KNOB (FLAT-32)(INPUT SELECTOR)		18	3-311-623-21	SPACER	
7	4-908-856-01	KNOB, SQUARE (POWER)		19	4-916-782-11	SHEET	
8	4-864-307-00	RING		20	*4-921-428-01	PLATE, BOTTOM	
9	4-923-879-01	BUTTON (DIA.4) (TURNOVER/TONE/MUTING/SUBSONIC)		21	7-682-547-09	SCREW +B 3X6	
10	*4-929-218-01	DAMPER		22	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
11	4-908-868-01	CASE		23	7-685-153-19	SCREW +P 3X30 TYPE2 SLIT	
12	X-4885-951-1	PANEL (LEFT) ASSY, SIDE		24	4-916-782-21	SHEET (A)	
				25	*4-916-761-01	SHEET, DAMPER	

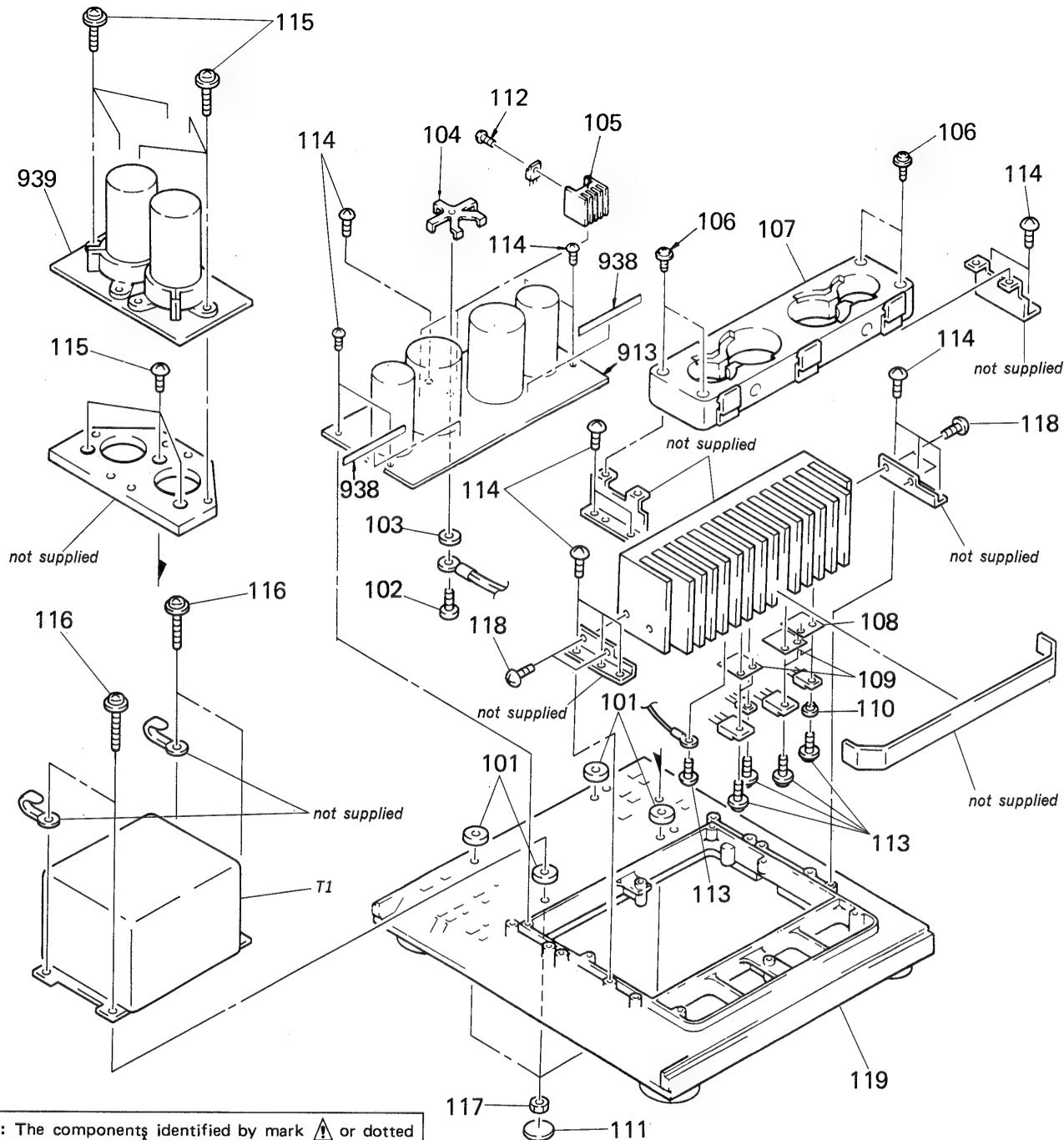
## **6-2. FRONT CHASSIS AND BACK PANEL ASSEMBLIES**



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	4-812-134-00	RIVET NYLON, 3.5		912	*A-4333-139-A	MOUNTED PCB, EQ MA	
52	*4-908-861-31	BRACKET, EQ		914	1-571-337-11	SWITCH, ROTARY SLIDE	
53	*4-923-842-61	PANEL, BACK		915	1-571-769-11	SWITCH, ROTARY SLIDE (REMOTE)	
54	*4-923-873-01	BRACKET, CORD STOPPER		916	1-571-770-11	SWITCH, ROTARY SLIDE (REMOTE)	
55	2-352-626-01	BUSHING, CORD		917	1-571-771-11	SWITCH, ROTARY SLIDE (REMOTE)	
56	*2-280-622-51	SUPPORT (M3), HEXAGON		918	*1-560-242-11	BUS BAR 3P	
57	*4-929-249-01	LABEL, MODEL NUMBER		919	*1-560-242-61	BUS BAR 2P	
58	*4-835-639-00	PLATE, GROUND		920	△1-559-271-11	CORD, POWER	
59	7-682-149-15	SCREW, TR		921	1-506-113-00	SHORT PLUG	
60	*4-921-402-01	HEAT SINK		922	1-535-691-11	TERMINAL	
61	7-682-547-09	SCREW +B 3X6		923	1-533-183-11	HOLDER, FUSE	
62	7-682-548-09	SCREW +B 3X8		924	*1-564-505-11	PLUG, CONNECTOR 2P	
63	*4-923-814-01	PLATE, CONNECTION		925	*1-564-506-11	PLUG, CONNECTOR 3P	
64	3-704-242-11	SCREW, TERMINAL, + BVTP CLAW		926	*1-564-507-11	PLUG, CONNECTOR 4P	
65	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S		927	*1-564-508-11	PLUG, CONNECTOR 5P	
66	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT		928	*1-564-509-11	PLUG, CONNECTOR 6P	
67	7-685-650-79	SCREW +BVTP 3X16 TYPE2 SLIT		929	*1-564-521-11	PLUG, CONNECTOR 6P	
68	3-655-653-21	BAND (TAITON), BINDING		930	*1-564-321-00	PIN, CONNECTOR 2P	
69	3-701-947-18	LABEL (T5A), FUSE		931	*1-631-317-11	PC BOARD, PRE OUT	
901	*1-628-959-11	PC BOARD, PW LED		932	*1-564-241-00	PIN, CONNECTOR 4P	
902	*1-628-963-11	PC BOARD, AC SW		933	*1-564-242-00	PIN, CONNECTOR 5P	
903	*A-4410-872-A	MOUNTED PCB, TONE		934	*1-535-140-00	BASE POST 19MM (10MM PITCH) 3P	
904	*1-628-954-11	PC BOARD, MUT		935	*1-561-652-00	SOCKET, CONNECTOR 12P	
905	*1-628-957-11	PC BOARD, JUNCTION		936	*1-560-533-00	PIN, CONNECTOR 12P	
906	*1-628-955-11	PC BOARD, PD		937	1-535-476-11	TERMINAL	
907	*1-628-953-11	PC BOARD, VOLUME		940	1-564-320-00	PIN, CONNECTOR 2P	
908	*1-628-958-11	PC BOARD, HP		941	*1-560-595-21	TERMINAL (WITH BASE)	
909	*1-626-600-11	PC BOARD, AC OUTLET		CNJ801	△1-526-794-11	OUTLET, AC	
910	*1-628-956-11	PC BOARD, SP TERMINAL		F802	△1-532-299-00	FUSE, TIME-LAG (T5A)	
911	*1-628-951-11	PC BOARD, INPUT		F803	△1-532-286-00	FUSE, TIME-LAG (T2.5A)	

Note: The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

## 6-3. MAIN CHASSIS ASSEMBLY



**Note:** The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
101	4-923-848-01	WASHER (B.S)		112	7-682-548-09	SCREW +B 3X8	
102	7-682-149-15	SCREW, TR		113	7-682-549-01	SCREW +B 3X10	
103	4-309-378-00	WASHER		114	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
104	*4-916-791-01	PLATE, GROUND, 5P		115	7-685-648-79	SCREW +BVTP 3X12 TYPE2 SLIT	
105	*4-921-402-01	HEAT SINK		116	7-682-669-09	SCREW +PSW 4X35	
106	4-921-437-01	SCREW (M3X20), TAPPING		117	7-684-024-04	N 4, TYPE 2	
107	*X-4885-928-3	HOLDER (A) ASSY		118	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
108	4-901-949-01	SHEET, INSULATING		119	X-4885-946-1	CHASSIS ASSY, MAIN	
109	4-908-847-01	SHEET, INSULATING		913	*A-4333-140-A	MOUNTED PCB, MAIN (B)	
110	2-371-561-00	BUSHING (P), INSULATING		938	*1-560-242-31	BUS BAR 5P	
111	*4-908-892-01	SPACER		939	*1-628-974-11	PC BOARD, CAPACITOR	
	T1		A-1-449-656-11			TRANSFORMER, POWER	

## SECTION 7

### ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked “★” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

**CAPACITORS:**MF:  $\mu$ F, PF:  $\mu\mu$ F.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

**COILS**

- MMH: mH, UH:  $\mu$ H

**SEMICONDUCTORS**

In each case, U:  $\mu$ , for example:  
 UA...:  $\mu$ A..., UPA...:  $\mu$ PA...  
 UPC...:  $\mu$ PC, UPD...:  $\mu$ PD...

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
 Replace only with part number specified.

Ref.No.	Part No.	Description			
901	*1-628-959-11	PC BOARD, PW LED			
902	*1-628-963-11	PC BOARD, AC SW			
903	*A-4410-872-A	MOUNTED PCB, TONE			
904	*1-628-954-11	PC BOARD, MUT			
905	*1-628-957-11	PC BOARD, JUNCTION			
906	*1-628-955-11	PC BOARD, PD			
907	*1-628-953-11	PC BOARD, VOLUME			
908	*1-628-958-11	PC BOARD, HP			
909	*1-626-600-11	PC BOARD, AC OUTLET			
910	*1-628-956-11	PC BOARD, SP TERMINAL			
911	*1-628-951-11	PC BOARD, INPUT			
912	*A-4333-139-A	MOUNTED PCB, EQ MA			
913	*A-4333-140-A	MOUNTED PCB, MAIN (B)			
914	1-571-337-11	SWITCH, ROTARY SLIDE			
915	1-571-769-11	SWITCH, ROTARY SLIDE (REMOTE)			
916	1-571-770-11	SWITCH, ROTARY SLIDE (REMOTE)			
917	1-571-771-11	SWITCH, ROTARY SLIDE (REMOTE)			
918	*1-560-242-11	BUS BAR 3P			
919	*1-560-242-61	BUS BAR 2P			
920	△1-559-271-11	CORD, POWER			
921	1-506-113-00	SHORT PLUG			
922	1-535-691-11	TERMINAL			
923	1-533-183-11	HOLDER, FUSE			
924	*1-564-505-11	PLUG, CONNECTOR 2P			
925	*1-564-506-11	PLUG, CONNECTOR 3P			
926	*1-564-507-11	PLUG, CONNECTOR 4P			
927	*1-564-508-11	PLUG, CONNECTOR 5P			
928	*1-564-509-11	PLUG, CONNECTOR 6P			
929	*1-564-521-11	PLUG, CONNECTOR 6P			
930	*1-564-321-00	PIN, CONNECTOR 2P			
931	*1-631-317-11	PC BOARD, PRE OUT			
932	*1-564-241-00	PIN, CONNECTOR 4P			
933	*1-564-242-00	PIN, CONNECTOR 5P			
934	*1-535-140-00	BASE POST 19MM (10MM PITCH) 3P			
935	*1-561-652-00	SOCKET, CONNECTOR 12P			
936	*1-560-533-00	PIN, CONNECTOR 12P			
937	1-535-476-11	TERMINAL			
938	*1-560-242-31	BUS BAR 5P			
939	*1-628-974-11	PC BOARD, CAPACITOR			
940	1-564-320-00	PIN, CONNECTOR 2P			
941	*1-560-595-21	TERMINAL (WITH BASE)			
C101	1-162-282-31	CERAMIC	100PF	5%	50V
C102	1-162-282-31	CERAMIC	100PF	5%	50V
C151	1-162-282-31	CERAMIC	100PF	5%	50V

Ref.No.	Part No.	Description			
C152	1-162-282-31	CERAMIC	100PF	5%	50V
C201	1-107-163-00	MICA	47PF	5%	500V
C202	1-130-973-00	FILM	0.022MF	5%	100V
C203	1-124-918-11	ELECT	47MF	20%	63V
C204	1-124-700-11	ELECT	330MF	20%	25V
C206	1-136-304-11	FILM	0.016MF	2%	0
C207	1-136-305-11	FILM	0.056MF	2%	0
C209	1-123-378-00	ELECT	1000MF	20%	63V
C211	1-123-333-00	ELECT	100MF	20%	25V
C212	1-123-378-00	ELECT	1000MF	20%	63V
C214	1-123-381-00	ELECT	2.2MF	20%	63V
C251	1-107-163-00	MICA	47PF	5%	500V
C252	1-130-973-00	FILM	0.022MF	5%	100V
C253	1-124-918-11	ELECT	47MF	20%	63V
C254	1-124-700-11	ELECT	330MF	20%	25V
C256	1-136-304-11	FILM	0.016MF	2%	0
C257	1-136-305-11	FILM	0.056MF	2%	0
C259	1-123-378-00	ELECT	1000MF	20%	63V
C262	1-123-378-00	ELECT	1000MF	20%	63V
C264	1-123-381-00	ELECT	2.2MF	20%	63V
C301	1-136-167-00	FILM	0.15MF	5%	50V
C302	1-130-470-00	MYLAR	820PF	5%	50V
C303	1-130-470-00	MYLAR	820PF	5%	50V
C304	1-130-478-00	MYLAR	0.0039MF	5%	50V
C305	1-130-478-00	MYLAR	0.0039MF	5%	50V
C306	1-130-481-00	MYLAR	0.0068MF	5%	50V
C307	1-130-481-00	MYLAR	0.0068MF	5%	50V
C308	1-136-161-00	FILM	0.047MF	5%	50V
C309	1-136-161-00	FILM	0.047MF	5%	50V
C351	1-136-167-00	FILM	0.15MF	5%	50V
C352	1-130-470-00	MYLAR	820PF	5%	50V
C353	1-130-470-00	MYLAR	820PF	5%	50V
C354	1-130-478-00	MYLAR	0.0039MF	5%	50V
C355	1-130-478-00	MYLAR	0.0039MF	5%	50V
C356	1-130-481-00	MYLAR	0.0068MF	5%	50V
C357	1-130-481-00	MYLAR	0.0068MF	5%	50V
C358	1-136-161-00	FILM	0.047MF	5%	50V
C359	1-136-161-00	FILM	0.047MF	5%	50V
C401	1-107-210-00	MICA	22PF	5%	500V
C402	1-109-619-00	MICA	180PF	5%	500V
C403	1-123-380-00	ELECT	1MF	20%	100V
C404	1-107-202-00	MICA	10PF	0.5PF	500V
C405	1-124-918-11	ELECT	47MF	20%	63V
C406	1-124-918-11	ELECT	47MF	20%	63V
C408	1-124-748-11	ELECT	22MF	20%	100V

Ref. No.	Part No.	Description			Ref. No.	Part No.	Description				
C409	1-130-317-00	FILM	0.068MF	5%	100V	C752	1-125-553-12	CAP, ELECT	18000MF	63V	
C410	1-107-048-00	MICA	7PF	0.5PF	500V	C753	1-125-550-11	ELECT	18000MF	63V	
C411	1-124-130-00	ELECT	100MF	20%	63V	C801	1-161-741-00	CERAMIC	0.001MF	10%	400V
C412	1-124-130-00	ELECT	100MF	20%	63V	CNJ801A	-526-794-11	OUTLET, AC			
C414	1-107-169-00	MICA	100PF	5%	500V	D202	8-719-933-36	ZENER DIODE HZS6B1L			
C415	1-107-169-00	MICA	100PF	5%	500V	D203	8-719-200-77	DIODE 10E2N			
C416	1-136-161-00	FILM	0.047MF	5%	50V	D204	8-719-000-26	DIODE US1060M			
C417	1-136-161-00	FILM	0.047MF	5%	50V	D401	8-719-933-41	ZENER DIODE HZS6C3L			
C418	1-123-378-00	ELECT	1000MF	20%	63V	D402	8-719-200-77	DIODE 10E2N			
C419	1-123-378-00	ELECT	1000MF	20%	63V	D403	8-719-200-77	DIODE 10E2N			
C420	1-123-376-00	ELECT	330MF	20%	63V	D405	8-719-000-26	DIODE US1060M			
C421	1-123-376-00	ELECT	330MF	20%	63V	D406	8-719-000-26	DIODE US1060M			
C422	1-136-161-00	FILM	0.047MF	5%	50V	D407	8-719-200-77	DIODE 10E2N			
C423	1-107-169-00	MICA	100PF	5%	500V	D408	8-719-200-77	DIODE 10E2N			
C451	1-107-210-00	MICA	22PF	5%	500V	D409	8-719-000-26	DIODE US1060M			
C452	1-109-619-00	MICA	180PF	5%	500V	D410	8-719-000-26	DIODE US1060M			
C453	1-123-380-00	ELECT	1MF	20%	100V	D411	8-719-000-26	DIODE US1060M			
C454	1-107-202-00	MICA	10PF	0.5PF	500V	D412	8-719-000-26	DIODE US1060M			
C455	1-124-918-11	ELECT	47MF	20%	63V	D413	8-719-000-26	DIODE US1060M			
C456	1-124-918-11	ELECT	47MF	20%	63V	D414	8-719-000-26	DIODE US1060M			
C458	1-124-748-11	ELECT	22MF	20%	100V	D415	8-719-000-26	DIODE US1060M			
C459	1-130-317-00	FILM	0.068MF	5%	100V	D416	8-719-000-26	DIODE US1060M			
C460	1-107-048-00	MICA	7PF	0.5PF	500V	D417	8-719-921-13	ZENER DIODE HZ2CLL			
C461	1-124-130-00	ELECT	100MF	20%	63V	D418	8-719-000-26	DIODE US1060M			
C462	1-124-130-00	ELECT	100MF	20%	63V	D419	8-719-000-26	DIODE US1060M			
C464	1-107-169-00	MICA	100PF	5%	500V	D420	8-719-000-26	DIODE US1060M			
C465	1-107-169-00	MICA	100PF	5%	500V	D451	8-719-933-41	ZENER DIODE HZS6C3L			
C466	1-136-161-00	FILM	0.047MF	5%	50V	D452	8-719-200-77	DIODE 10E2N			
C467	1-136-161-00	FILM	0.047MF	5%	50V	D453	8-719-200-77	DIODE 10E2N			
C468	1-123-378-00	ELECT	1000MF	20%	63V	D455	8-719-000-26	DIODE US1060M			
C469	1-123-378-00	ELECT	1000MF	20%	63V	D456	8-719-000-26	DIODE US1060M			
C470	1-123-376-00	ELECT	330MF	20%	63V	D457	8-719-200-77	DIODE 10E2N			
C471	1-123-376-00	ELECT	330MF	20%	63V	D458	8-719-200-77	DIODE 10E2N			
C472	1-136-161-00	FILM	0.047MF	5%	50V	D459	8-719-000-26	DIODE US1060M			
C473	1-107-169-00	MICA	100PF	5%	500V	D460	8-719-000-26	DIODE US1060M			
C474	1-130-469-00	MYLAR	680PF	5%	50V	D461	8-719-000-26	DIODE US1060M			
C601	1-123-334-00	ELECT	220MF	20%	25V	D462	8-719-000-26	DIODE US1060M			
C602	1-136-153-00	FILM	0.01MF	5%	50V	D463	8-719-000-26	DIODE US1060M			
C603	1-136-157-00	FILM	0.022MF	5%	50V	D464	8-719-000-26	DIODE US1060M			
C604	1-123-333-00	ELECT	100MF	20%	25V	D465	8-719-000-26	DIODE US1060M			
C605	1-124-918-11	ELECT	47MF	20%	63V	D466	8-719-000-26	DIODE US1060M			
C606	1-123-380-00	ELECT	1MF	20%	63V	D467	8-719-921-13	ZENER DIODE HZ2CLL			
C607	1-123-378-00	ELECT	1000MF	20%	63V	D468	8-719-000-26	DIODE US1060M			
C608	1-123-369-00	ELECT	4.7MF	20%	50V	D469	8-719-000-26	DIODE US1060M			
C609	1-106-343-00	MYLAR	0.001MF	10%	100V	D470	8-719-000-26	DIODE US1060M			
C610A	1-130-480-00	MYLAR	0.0056MF	5%	50V	D505	8-719-302-07	LED SEL1810A (MUTE)			
C610	1-123-380-00	ELECT	1MF	20%	63V	D506	8-719-302-07	LED SEL1810A (SOURCE DIRECT)			
C611	1-123-356-00	ELECT	10MF	20%	25V	D507	8-719-302-07	LED SEL1810A (TONE)			
C612	1-106-343-00	MYLAR	0.001MF	10%	100V	D601	8-719-200-77	DIODE 10E2N			
C660	1-130-480-00	MYLAR	0.0056MF	5%	50V	D602	8-719-200-77	DIODE 10E2N			
C662	1-106-343-00	MYLAR	0.001MF	10%	100V	D603	8-719-200-77	DIODE 10E2N			
C701	1-125-502-11	CAP, ELECT	10000MF		63V	D604	8-719-000-26	DIODE US1060M			
C702	1-125-553-12	CAP, ELECT	18000MF		63V	D605	8-719-000-26	DIODE US1060M			
C703	1-125-550-11	ELECT	18000MF		63V	D606	8-719-000-26	DIODE US1060M			
C705	1-136-601-11	FILM	0.01MF	10%	630V	D607	8-719-300-82	LED SEL2213C (POWER (RED))			
C751	1-125-502-11	CAP, ELECT	10000MF		63V	D608	8-719-300-82	LED SEL2213C (POWER (RED))			
						D609	8-719-303-00	LED SEL2510C (POWER (GREEN))			
						D610	8-719-303-00	LED SEL2510C (POWER (GREEN))			

Note: The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
D611	8-719-303-00	LED SEL2510C (POWER (GREEN))	Q402	8-729-108-05	TRANSISTOR 2SA1841PA
D612	8-719-000-26	DIODE US1060M	Q403	8-729-108-05	TRANSISTOR 2SA1841PA
D613	8-719-000-26	DIODE US1060M	Q404	8-729-699-51	TRANSISTOR 2SA995F
D614	8-719-933-57	ZENER DIODE HZS982L	Q405	8-729-802-71	TRANSISTOR 2SA1407-D
D701	8-719-230-02	DIODE 30DF2	Q406	8-729-104-91	TRANSISTOR 2SA1383
D702	8-719-230-02	DIODE 30DF2	Q407	8-729-201-56	TRANSISTOR 2SK246GR2
D703	8-719-230-02	DIODE 30DF2	Q408	8-729-104-18	TRANSISTOR 2SC3514-Q
D704	8-719-230-02	DIODE 30DF2	Q409	8-729-104-18	TRANSISTOR 2SC3514-Q
D705	8-719-300-27	DIODE CTU-22S	Q410	8-729-173-13	TRANSISTOR 2SB731
D706	8-719-200-77	DIODE 10E2N	Q411	8-729-203-45	TRANSISTOR 2SC3423
D707	8-719-200-77	DIODE 10E2N	Q412	8-729-104-18	TRANSISTOR 2SC3514-Q
D708	8-719-200-77	DIODE 10E2N	Q413	8-729-104-91	TRANSISTOR 2SA1383
D709	8-719-200-77	DIODE 10E2N	Q414	8-729-127-53	TRANSISTOR 2SC2275
D755	8-719-300-25	DIODE CTU-22R	Q415	8-729-190-53	TRANSISTOR 2SA985A-P
D756	8-719-200-77	DIODE 10E2N	Q416	8-729-303-88	TRANSISTOR 2SC3856
D757	8-719-200-77	DIODE 10E2N	Q417	8-729-303-88	TRANSISTOR 2SC3856
D758	8-719-200-77	DIODE 10E2N	Q418	8-729-303-85	TRANSISTOR 2SA1492
D759	8-719-200-77	DIODE 10E2N	Q419	8-729-303-85	TRANSISTOR 2SA1492
F802 $\Delta$ 1-532-299-00	FUSE, TIME-LAG (T5A)		Q420	8-729-108-14	TRANSISTOR 2SA988F
F803 $\Delta$ 1-532-286-00	FUSE, TIME-LAG (T2.5A)		Q451	8-729-203-21	TRANSISTOR 2SK389-GR
IC203	8-759-905-42	IC NE5534P	Q452	8-729-108-05	TRANSISTOR 2SA1841PA
IC253	8-759-905-42	IC NE5534P	Q453	8-729-108-05	TRANSISTOR 2SA1841PA
IC601	8-759-111-68	IC UPC1237HA	Q454	8-729-699-51	TRANSISTOR 2SA995F
J101	1-507-831-00	JACK, PIN 6P	Q455	8-729-802-71	TRANSISTOR 2SA1407-D
J102	1-507-831-31	JACK, PIN 6P (INPUT)	Q456	8-729-104-91	TRANSISTOR 2SA1383
J103	1-507-831-00	JACK, PIN 6P	Q457	8-729-201-56	TRANSISTOR 2SK246GR2
J104	1-507-831-00	JACK, PIN 6P	Q458	8-729-104-18	TRANSISTOR 2SC3514-Q
J601	1-507-863-51	JACK, LARGE TYPE (HEADPHONES)	Q459	8-729-104-18	TRANSISTOR 2SC3514-Q
J602	1-507-852-00	JACK, PIN 2P (PRE OUT)	Q460	8-729-173-13	TRANSISTOR 2SB731
L101	1-413-101-00	COIL, INPUT	Q461	8-729-203-45	TRANSISTOR 2SC3423
L102	1-413-101-00	COIL, INPUT	Q462	8-729-104-18	TRANSISTOR 2SC3514-Q
L151	1-413-101-00	COIL, INPUT	Q463	8-729-104-91	TRANSISTOR 2SA1383
L152	1-413-101-00	COIL, INPUT	Q464	8-729-127-53	TRANSISTOR 2SC2275
L401	*1-422-009-13	COIL, AIR-CORE	Q465	8-729-190-53	TRANSISTOR 2SA985A-P
L402	1-422-261-11	COIL, AIR-CORE	Q466	8-729-303-88	TRANSISTOR 2SC3856
L403	1-422-261-11	COIL, AIR-CORE	Q467	8-729-303-88	TRANSISTOR 2SC3856
L451	*1-422-009-13	COIL, AIR-CORE	Q468	8-729-303-85	TRANSISTOR 2SA1492
L452	1-422-261-11	COIL, AIR-CORE	Q469	8-729-303-85	TRANSISTOR 2SA1492
L453	1-422-261-11	COIL, AIR-CORE	Q470	8-729-108-14	TRANSISTOR 2SA988F
Q201	8-729-214-71	TRANSISTOR 2SK147	Q601	8-729-119-76	TRANSISTOR 2SA1175HFE
Q202	8-729-805-05	TRANSISTOR 2SC3601	Q602	8-729-119-76	TRANSISTOR 2SA1175HFE
Q203	8-729-119-78	TRANSISTOR 2SC2785HFE	Q603	8-729-177-42	TRANSISTOR 2SD774-3
Q204	8-729-201-56	TRANSISTOR 2SK246GR2	Q604	8-729-194-57	TRANSISTOR 2SC945-P
Q205	8-729-127-53	TRANSISTOR 2SC2275	R101	1-246-545-00	CARBON 1M 5% 1/4W
Q206	8-729-201-56	TRANSISTOR 2SK246GR2	R102	1-246-545-00	CARBON 1M 5% 1/4W
Q207	8-729-167-62	TRANSISTOR 2SC2676	R103	1-246-545-00	CARBON 1M 5% 1/4W
Q208	8-729-375-61	TRANSISTOR 2SD756	R104	1-246-545-00	CARBON 1M 5% 1/4W
Q209	8-729-214-71	TRANSISTOR 2SK147	R105	1-246-545-00	CARBON 1M 5% 1/4W
Q251	8-729-214-71	TRANSISTOR 2SK147	R106	1-246-545-00	CARBON 1M 5% 1/4W
Q252	8-729-805-05	TRANSISTOR 2SC3601	R107	1-247-713-11	CARBON 1K 5% 1/4W
Q253	8-729-119-78	TRANSISTOR 2SC2785HFE	R108	1-247-713-11	CARBON 1K 5% 1/4W
Q254	8-729-201-56	TRANSISTOR 2SK246GR2	R109	1-247-713-11	CARBON 1K 5% 1/4W
Q255	8-729-190-53	TRANSISTOR 2SA985A-P	R110	1-247-713-11	CARBON 1K 5% 1/4W
Q256	8-729-201-56	TRANSISTOR 2SK246GR2	R111	1-246-545-00	CARBON 1M 5% 1/4W
Q257	8-729-113-82	TRANSISTOR 2SA1138	R112	1-247-713-11	CARBON 1K 5% 1/4W
Q258	8-729-371-61	TRANSISTOR 2SB716-D	R113	1-247-713-11	CARBON 1K 5% 1/4W
Q259	8-729-214-71	TRANSISTOR 2SK147	R151	1-246-545-00	CARBON 1M 5% 1/4W
Q401	8-729-203-21	TRANSISTOR 2SK389-GR	R152	1-246-545-00	CARBON 1M 5% 1/4W

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Ref. No.	Part No.	Description	Ref. No.	Part No.	Description						
R153	1-246-545-00	CARBON	1M	5%	1/4W	R303	1-247-722-11	CARBON	5.6K	5%	1/4W
R154	1-246-545-00	CARBON	1M	5%	1/4W	R304	1-247-722-11	CARBON	5.6K	5%	1/4W
R155	1-246-545-00	CARBON	1M	5%	1/4W	R305	1-247-717-11	CARBON	2.2K	5%	1/4W
R156	1-246-545-00	CARBON	1M	5%	1/4W	R306	1-249-591-11	CARBON	43K	5%	1/4W
R157	1-247-713-11	CARBON	1K	5%	1/4W	R307	1-247-152-00	CARBON	7.5K	5%	1/4W
R158	1-247-713-11	CARBON	1K	5%	1/4W	R308	1-249-465-11	CARBON	47K	5%	1/4W
R159	1-247-713-11	CARBON	1K	5%	1/4W	R309	1-249-465-11	CARBON	47K	5%	1/4W
R160	1-247-713-11	CARBON	1K	5%	1/4W	R310	1-259-502-11	CARBON	4.7M	5%	1/4W
R161	1-246-545-00	CARBON	1M	5%	1/4W	R311	1-259-502-11	CARBON	4.7M	5%	1/4W
R162	1-247-713-11	CARBON	1K	5%	1/4W	R312	1-259-502-11	CARBON	4.7M	5%	1/4W
R163	1-247-713-11	CARBON	1K	5%	1/4W	R313	1-259-502-11	CARBON	4.7M	5%	1/4W
R201	1-249-465-11	CARBON	47K	5%	1/4W	R314	1-259-502-11	CARBON	4.7M	5%	1/4W
R202	1-247-706-11	CARBON	330	5%	1/4W	R315	1-259-502-11	CARBON	4.7M	5%	1/4W
R203	1-247-700-11	CARBON	100	5%	1/4W	R316	1-249-590-11	CARBON	39K	5%	1/4W
R204	1-249-516-11	CARBON	33	5%	1/4W	R317	1-249-469-11	CARBON	100K	5%	1/4W
R205	1-247-128-00	CARBON	750	5%	1/4W	R318	1-259-502-11	CARBON	4.7M	5%	1/4W
R206	1-247-128-00	CARBON	750	5%	1/4W	R319	1-259-502-11	CARBON	4.7M	5%	1/4W
R207	1-249-512-11	CARBON	22	5%	1/4W	R352	1-249-465-11	CARBON	47K	5%	1/4W
R208	1-247-708-11	CARBON	470	5%	1/4W	R353	1-247-722-11	CARBON	5.6K	5%	1/4W
R209	1-249-518-11	CARBON	39	5%	1/4W	R354	1-247-722-11	CARBON	5.6K	5%	1/4W
R210	1-247-704-11	CARBON	220	5%	1/4W	R355	1-247-717-11	CARBON	2.2K	5%	1/4W
R211	1-247-721-11	CARBON	4.7K	5%	1/4W	R356	1-249-591-11	CARBON	43K	5%	1/4W
R212	1-214-937-00	CARBON	1M	5%	1/2W	R357	1-247-152-00	CARBON	7.5K	5%	1/4W
R213	1-249-844-11	CARBON	56K	1%	1/2W	R358	1-249-465-11	CARBON	47K	5%	1/4W
R215	1-249-818-11	CARBON	4.7K	1%	1/2W	R359	1-249-465-11	CARBON	47K	5%	1/4W
R217	1-259-501-11	CARBON	6.8	5%	1/2W	R360	1-259-502-11	CARBON	4.7M	5%	1/4W
R218	1-247-739-11	CARBON	100	5%	1/2W	R361	1-259-502-11	CARBON	4.7M	5%	1/4W
R219	1-247-704-11	CARBON	220	5%	1/4W	R362	1-259-502-11	CARBON	4.7M	5%	1/4W
R220	1-247-725-11	CARBON	10K	5%	1/4W	R363	1-259-502-11	CARBON	4.7M	5%	1/4W
R221	1-247-704-11	CARBON	220	5%	1/4W	R364	1-259-502-11	CARBON	4.7M	5%	1/4W
R222	1-247-717-11	CARBON	2.2K	5%	1/4W	R365	1-259-502-11	CARBON	4.7M	5%	1/4W
R223	1-247-723-11	CARBON	6.8K	5%	1/4W	R366	1-249-590-11	CARBON	39K	5%	1/4W
R224	△.1-213-086-00	FUSIBLE	120	5%	1W F	R367	1-249-469-11	CARBON	100K	5%	1/4W
R225	1-247-138-00	CARBON	2K	5%	1/4W	R368	1-259-502-11	CARBON	4.7M	5%	1/4W
R251	1-249-465-11	CARBON	47K	5%	1/4W	R369	1-259-502-11	CARBON	4.7M	5%	1/4W
R252	1-247-706-11	CARBON	330	5%	1/4W	R401	1-259-503-11	CARBON	4.7M	5%	1/2W
R253	1-247-700-11	CARBON	100	5%	1/4W	R402	1-249-673-11	CARBON	1K	5%	1/2W
R254	1-249-516-11	CARBON	33	5%	1/4W	R403	1-249-512-11	CARBON	22	5%	1/4W
R255	1-247-128-00	CARBON	750	5%	1/4W	R404	1-249-512-11	CARBON	22	5%	1/4W
R256	1-247-128-00	CARBON	750	5%	1/4W	R405	1-247-717-11	CARBON	2.2K	5%	1/4W
R257	1-249-512-11	CARBON	22	5%	1/4W	R406	1-247-704-11	CARBON	220	5%	1/4W
R258	1-247-708-11	CARBON	470	5%	1/4W	R408	1-247-703-11	CARBON	180	5%	1/4W
R259	1-249-518-11	CARBON	39	5%	1/4W	R409	1-247-704-11	CARBON	220	5%	1/4W
R260	1-247-704-11	CARBON	220	5%	1/4W	R410	1-246-545-00	CARBON	1M	5%	1/4W
R261	1-247-721-11	CARBON	4.7K	5%	1/4W	R412	△.1-219-010-11	FUSIBLE	33	5%	1/2W
R262	1-214-937-00	CARBON	1M	5%	1/2W	R413	1-249-490-11	CARBON	27K	5%	1/2W
R263	1-249-844-11	CARBON	56K	1%	1/2W	R414	1-247-704-11	CARBON	220	5%	1/4W
R265	1-249-818-11	CARBON	4.7K	1%	1/2W	R415	1-246-531-00	CARBON	270K	5%	1/4W
R267	1-259-501-11	CARBON	6.8	5%	1/2W	R416	1-247-740-11	CARBON	120	5%	1/2W
R268	1-247-739-11	CARBON	100	5%	1/2W	R417	1-249-486-11	CARBON	12K	5%	1/2W
R269	1-247-704-11	CARBON	220	5%	1/4W	R418	1-247-764-11	CARBON	10K	5%	1/2W
R270	1-247-725-11	CARBON	10K	5%	1/4W	R419	1-259-503-11	CARBON	4.7M	5%	1/2W
R271	1-247-704-11	CARBON	220	5%	1/4W	R420	1-249-556-11	CARBON	1.5K	5%	1/4W
R272	1-247-717-11	CARBON	2.2K	5%	1/4W	R421	1-247-721-11	CARBON	4.7K	5%	1/4W
R273	1-249-577-11	CARBON	11K	5%	1/4W	R422	△.1-219-022-11	FUSIBLE	100	5%	1/2W
R274	△.1-213-086-00	FUSIBLE	120	5%	1W	R423	1-247-717-11	CARBON	2.2K	5%	1/4W
R302	1-249-465-11	CARBON	47K	5%	1/4W	R424	1-247-718-11	CARBON	2.7K	5%	1/4W

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Ref.No.	Part No.	Description		Ref.No.	Part No.	Description		
R425	1-247-712-11	CARBON	820	5%	1/4W	R484	△1-217-151-00	RES, METAL PLATE 0.22
R426	△1-219-038-11	FUSIBLE	470	5%	1/2W	R485	△1-217-151-00	RES, METAL PLATE 0.22
R427	△1-217-995-11	FUSIBLE	8.2	5%	1/2W	R486	△1-217-151-00	RES, METAL PLATE 0.22
R428	△1-217-995-11	FUSIBLE	8.2	5%	1/2W	R487	△1-217-151-00	RES, METAL PLATE 0.22
R429	△1-219-022-11	FUSIBLE	100	5%	1/2W	R488	△1-247-692-11	CARBON 22 5%
R430	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R489	△1-247-692-11	CARBON 22 5% 1/4W F
R431	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R490	△1-247-717-11	CARBON 2.2K 5% 1/4W F
R432	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R491	1-249-460-11	CARBON 15K 5% 1/4W
R433	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R492	△1-219-002-11	FUSIBLE 15 5% 1/2W
R434	△1-217-151-00	RES, METAL PLATE 0.22				R493	1-247-727-11	CARBON 10 5% 1/2W
R435	△1-217-151-00	RES, METAL PLATE 0.22				R494	△1-219-022-11	FUSIBLE 100 5% 1/2W
R436	△1-217-151-00	RES, METAL PLATE 0.22				R495	△1-219-022-11	FUSIBLE 100 5% 1/2W
R437	△1-217-151-00	RES, METAL PLATE 0.22				R496	1-247-752-11	CARBON 1K 5% 1/2W
R438	△1-247-692-11	CARBON	22	5%	1/4W F	R497	1-249-482-11	CARBON 4.7 5% 1/2W
R439	△1-247-692-11	CARBON	22	5%	1/4W F	R498	1-249-482-11	CARBON 4.7 5% 1/2W
R440	△1-247-717-11	CARBON	2.2K	5%	1/4W F	R499	△1-219-002-11	FUSIBLE 15 5% 1/2W
R441	1-249-460-11	CARBON	15K	5%	1/4W	R500	1-247-752-11	CARBON 1K 5% 1/2W
R442	△1-219-002-11	FUSIBLE	15	5%	1/2W	R501	1-249-469-11	CARBON 100K 5% 1/4W
R443	1-247-727-11	CARBON	10	5%	1/2W	R502	1-249-469-11	CARBON 100K 5% 1/4W
R444	△1-219-022-11	FUSIBLE	100	5%	1/2W	R551	1-249-469-11	CARBON 100K 5% 1/4W
R445	△1-219-022-11	FUSIBLE	100	5%	1/2W	R552	1-249-469-11	CARBON 100K 5% 1/4W
R446	1-247-752-11	CARBON	1K	5%	1/2W	R601	1-247-891-00	CARBON 330K 5% 1/4W
R447	1-249-482-11	CARBON	4.7	5%	1/2W	R602	1-247-887-00	CARBON 220K 5% 1/4W
R448	1-249-482-11	CARBON	4.7	5%	1/2W	R603	1-247-725-11	CARBON 10K 5% 1/4W
R449	△1-219-002-11	FUSIBLE	15	5%	1/2W	R604	1-249-461-11	CARBON 18K 5% 1/4W
R450	1-247-752-11	CARBON	1K	5%	1/2W	R605	1-249-606-11	CARBON 180K 5% 1/4W
R451	1-259-503-11	CARBON	4.7M	5%	1/2W	R606	1-247-725-11	CARBON 10K 5% 1/4W
R452	1-249-673-11	CARBON	1K	5%	1/2W	R607	1-247-717-11	CARBON 2.2K 5% 1/4W
R453	1-249-512-11	CARBON	22	5%	1/4W	R608	1-249-465-11	CARBON 47K 5% 1/4W
R454	1-249-512-11	CARBON	22	5%	1/4W	R609	1-249-465-11	CARBON 47K 5% 1/4W
R455	1-247-717-11	CARBON	2.2K	5%	1/4W	R610	1-249-462-11	CARBON 22K 5% 1/4W
R456	1-247-704-11	CARBON	220	5%	1/4W	R612	1-247-717-11	CARBON 2.2K 5% 1/4W
R458	1-247-703-11	CARBON	180	5%	1/4W	R613	1-247-743-11	CARBON 220 5% 1/2W
R459	1-247-704-11	CARBON	220	5%	1/4W	R616	1-247-693-11	CARBON 27 5% 1/4W
R460	1-246-545-00	CARBON	1M	5%	1/4W	R617	△1-249-489-11	CARBON 22K 5% 1/2W F
R462	△1-219-010-11	FUSIBLE	33	5%	1/2W	R618	1-247-750-11	CARBON 680 5% 1/2W
R463	1-249-490-11	CARBON	27K	5%	1/2W	R619	1-247-750-11	CARBON 680 5% 1/2W
R464	1-247-704-11	CARBON	220	5%	1/4W	R620	1-247-750-11	CARBON 680 5% 1/2W
R465	1-246-531-00	CARBON	270K	5%	1/4W	R621	1-247-749-11	CARBON 560 5% 1/2W
R466	1-247-740-11	CARBON	120	5%	1/2W	R622	1-247-749-11	CARBON 560 5% 1/2W
R467	1-249-486-11	CARBON	12K	5%	1/2W	R623	1-247-749-11	CARBON 560 5% 1/2W
R468	1-247-764-11	CARBON	10K	5%	1/2W	R624	1-247-749-11	CARBON 560 5% 1/2W
R469	1-259-503-11	CARBON	4.7M	5%	1/2W	R625	1-247-749-11	CARBON 560 5% 1/2W
R470	1-249-556-11	CARBON	1.5K	5%	1/4W	R626	1-247-749-11	CARBON 560 5% 1/2W
R471	1-247-721-11	CARBON	4.7K	5%	1/4W	R627	1-247-749-11	CARBON 560 5% 1/2W
R472	△1-219-022-11	FUSIBLE	100	5%	1/2W	R628	1-247-749-11	CARBON 560 5% 1/2W
R473	1-247-717-11	CARBON	2.2K	5%	1/4W	R630	1-247-727-11	CARBON 10 5% 1/2W
R474	1-247-718-11	CARBON	2.7K	5%	1/4W	R631	1-247-255-00	CARBON 4.3K 5% 1/2W
R475	1-247-712-11	CARBON	820	5%	1/4W	R632	1-247-255-00	CARBON 4.3K 5% 1/2W
R476	△1-219-038-11	FUSIBLE	470	5%	1/2W	R633A	1-247-721-11	CARBON 4.7K 5% 1/4W
R477	△1-217-995-11	FUSIBLE	8.2	5%	1/2W	R633	1-247-739-11	CARBON 100 5% 1/2W
R478	△1-217-995-11	FUSIBLE	8.2	5%	1/2W	R634	1-247-235-00	CARBON 620 5% 1/2W
R479	△1-219-022-11	FUSIBLE	100	5%	1/2W	R635	1-247-235-00	CARBON 620 5% 1/2W
R480	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R650	1-247-138-00	CARBON 2K 5% 1/4W
R481	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R651	1-247-891-00	CARBON 330K 5% 1/4W
R482	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R652	1-247-721-11	CARBON 4.7K 5% 1/4W
R483	△1-217-989-11	FUSIBLE	4.7	5%	1/2W	R653	△1-212-934-00	FUSIBLE 1 5% 1/2W F

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Ref.No.	Part No.	Description
R680	1-247-727-11	CARBON 10 5% 1/2W
R681	1-247-255-00	CARBON 4.3K 5% 1/2W
R682	1-247-255-00	CARBON 4.3K 5% 1/2W
R683	1-247-739-11	CARBON 100 5% 1/2W
R701 $\Delta$ .1-213-086-00	FUSIBLE	120 5% 1W F
R751 $\Delta$ .1-213-086-00	FUSIBLE	120 5% 1W F
RT401	1-237-873-11	RES, ADJ, CARBON 100
RT402	1-237-455-11	RES, ADJ, CARBON 500
RT451	1-237-873-11	RES, ADJ, CARBON 100
RT452	1-237-455-11	RES, ADJ, CARBON 500
RV301	1-238-416-11	RES, VAR, CARBON 150K /150K (BALANCE)
RV302	1-238-418-11	RES, VAR, CAOBPN 250K/250K (TREBLE)
RV303	1-238-417-11	RES, VAR, CARBON 25K/500K (BASS)
RV304	1-237-175-11	RES, VAR, CARBON 120K /120K (ATTENUATOR)
RY201	1-515-614-11	RELAY
RY601	1-515-614-11	RELAY
RY602	1-515-356-00	RELAY
RY603	1-515-356-00	RELAY
S101	1-554-879-11	SWITCH, SLIDE (INPUT SELECTOR)
S102	1-570-593-11	SWITCH, SLIDE (REMOTE TYPE) (INPUT SELECTOR)
S103	1-570-076-11	SWITCH, SLIDE (REMOTE TYPE) (REC OUT SELECTOR)
S201	1-554-019-21	SWITCH, SLIDE (REMOTE TYPE) (CARTRIDGE LOAD)
S301	1-571-773-11	SWITCH, PUSH (2 KEY)(MUTING -20dB)
S302	1-571-773-11	SWITCH, PUSH (2 KEY)(SUBSONIC)
S303	1-571-772-11	SWITCH, PUSH (3 KEY)(TONE)
S304	1-571-774-11	SWITCH, PUSH (1 KEY)(SOURCE DIRECT)
S305	1-571-772-11	SWITCH, PUSH (3 KEY)(TURNOVER)
S306	1-571-772-11	SWITCH, PUSH (3 KEY)(TURNOVER)
S501	1-571-775-11	SWITCH, ROTARY (MODE)
S601	1-571-776-11	SWITCH, ROTARY (SPEAKERS)
S801 $\Delta$ .1-554-538-00	SWITCH, PUSH (AC POWER)(1 KEY)	
T1 $\Delta$ .1-449-656-11	TRANSFORMER, POWER	
TM801	1-536-767-41	TERMINAL BOARD, SPEAKER (SPEAKER A)
TM802	1-536-767-41	TERMINAL BOARD, SPEAKER (SPEAKER B)

ACCESSORY & PACKING MATERIAL

3-786-728-41	MANUAL, INSTRUCTION
4-847-802-00	SCREW
4-915-880-01	SHEET, PROTECTION
*4-923-860-01	CUSHION
*4-929-261-01	INDIVIDUAL CARTON

**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.